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Hisashi Miyamori

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EXAMINER

RASHID, DAVID

ART UNIT

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MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,236	Applicant(s) MIYAMORI, HISASHI	
	Examiner DAVID P. RASHID	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

[1] All of the examiner's suggestions presented herein below have been assumed for examination purposes, unless otherwise noted.

Amendments

[2] This office action is responsive to the claim and specification amendment received on January 22, 2008. Claims 1-8 and 10 remain pending; Claim 9 cancelled.

Drawings

[3] The replacement drawings were received on January 22, 2008 and are acceptable. In response to applicant's drawing amendments and remarks, the previous drawing objections are withdrawn.

Specification

[4] The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

[5] In response to applicant's claim objections amendments and remarks received on January 22, 2008, the previous claim objections are withdrawn.

Claim Rejections - 35 USC § 101

[6] In response to applicant's claim 35 USC § 101 rejection amendments and remarks received on January 22, 2008, the previous claim 35 USC § 101 rejections are withdrawn.

Claim Rejections - 35 USC § 103

[7] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[8] **Claims 1-2 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pingali et al. (Ball Tracking and Virtual Replays for Innovative Tennis Broadcasts, 15th International Conference on Pattern Recognition, 2000, Proceedings, Vol. 4, pg 152 – 156) [*hereinafter* “Pingali”] in view of Pizano et al., U.S. Patent No. 6,101,274 (filed Jun. 2, 1997) (issued Aug. 8, 2000) [*hereinafter* “Pizano”].

[i] Regarding **Claim 1**, while Pingali discloses an image recognition apparatus (fig. 1; s. 2.1, pp. 152-53) for recognizing movements of players matched against each other (“the players” in Introduction, p. 152) between domains partitioned with such an obstacle as net in a sport match or game (tennis net in fig. 2; domains partitioned in fig. 4) from contents including a television program being telecasted to show the sport match or game (fig. 2; “broadcasting” in Introduction, p. 152), an image material in an uncompleted state for broadcasting and contents recorded in such a recording medium as a VTR (Introduction, p. 152; fig. 2), the image recognition apparatus comprising:

a score information obtaining section (the section responsible for keeping track of a “changing game score”, s. 3.1, p. 154) configured to obtain score information indicative of scores of the respective players which vary as the sport match or game proceeds;

a play event information obtaining section (fig. 1; “Trigger received?” in fig. 1) configured to obtain play event information indicative of a characteristic movement of each of the players from picture information included in the contents (the frames are captured upon the serve/hit of the tennis ball that causes a projection, and since each player

serves/hits, the characteristic movement of each of the players from the picture information is the serve/hit itself), the picture information containing images of the obstacle and the players (fig. 2); and

an image substance recognizing section (the section responsible for “score-based queries”, s. 3.1, p. 154; the section responsible for keeping track of a “changing game score”, s. 3.1, p. 154) configured to make a comparison between a score information item obtained immediately before a point in time of generation of the play event information and a score information item obtained immediately after the point in time and make reference to a result brought by the play event information (fig. 2 shows an example of tracking the ball from a suggested unreturned hit; an unreturned hit gives a new score to one of the players; the tracked path/projection of the ball immediately before and after hitting the ground in an out-of-bound area would be an automatic change in score, thus “a score information item” being where the tennis ball hit the ground), thereby recognizing a substance of an image provided by the play event information (this would recognize a hit/serve by the other player from the one who did not return the ball – both actions on behalf of each player are “play event information”), Pingali does not teach wherein the score information itself is displayed on a screen.

Pizano discloses an apparatus for detecting and interpreting textual captions in digital video signals (fig. 6) that teaches wherein the score information itself is displayed on a screen (“3) SPORTS/TRANSPARENT” in fig. 1; the score in fig. 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the screen of Pingali to include score information as taught by

Pizano “to identify the collection of video frames that contain text captions.”, Pizano, 5:54-56 and “to create a score browser which would enable a person to move directly to specific portions of the video”, Pizano, 1:61-63.

- [ii] Regarding **Claim 2**, while Pingali in view of Pizano disclose the image recognition apparatus according to Claim 1, Pingali in view of Pizano do not teach wherein the score information obtaining section is configured to obtain the score information from at least one of the picture information included in the contents, sound information including commentary voice of a commentator, and data information transmitted as multiplexed on radio waves during broadcasting.

Pizano discloses an apparatus for detecting and interpreting textual captions in digital video signals (fig. 6; fig. 7; fig. 10) that teaches wherein a score information obtaining section (section responsible for fig. 6, fig. 7, fig. 10) is configured to obtain the score information (bottom pictures of the score in fig. 10) from at least one of the picture information (top picture in fig. 10) included in the contents (the contents being everything displayed at the top picture in fig. 10), sound information including commentary voice of a commentator, and data information transmitted as multiplexed on radio waves during broadcasting.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the score information obtaining section of Pingali in view of Pizano to include configuring to obtain the score information from at least one of the picture information included in the contents, sound information including commentary voice of a commentator, and data information transmitted as multiplexed on radio waves during

broadcasting as taught by Pizano “to identify the collection of video frames that contain text captions.”, Pizano, Col. 5, lines 54 – 56 and “to create a score browser which would enable a person to move directly to specific portions of the video”, Pizano, Col. 1, lines 61 – 63.

[iii] Regarding **Claim 10**, Claim 1 recites identical features as in Claim 10. Thus, references/arguments equivalent to those presented above for Claim 1 are equally applicable to Claim 10.

[9] **Claims 3-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pingali in view of Pizano and Sudhir et al. (Automatic Classification of Tennis Video for High-level Content-based Retrieval, Proceedings of the 1998 International Workshop on Content-Based Access of Image and Video Databases (CAIVD '98), 1998, pp 81 – 90) [*hereinafter* “Sudhir”].

[i] Regarding **Claim 3**, while Pingali in view of Pizano disclose image recognition apparatus according to Claims 1 or 2, further comprising:

a domain item extracting section (section responsible for obtaining all coordinates to track/detect/match instruments, obstacle, and boundaries of the tennis court as shown in fig. 2 and fig. 4) configured to extract instrument information on an instrument moving between the domains to serve as an object of score count in the sport match or game (an ace by Sampras in fig. 3 was within the tennis boundary domain, thus a scoring count)

Pingali does not teach a domain item extracting section configured to extract from the picture information facility information including information on the obstacle, information on the domains and information on boundary lines between the domains and an area outside the domains, and player's position information indicative of a player's position; rule information storage section configured to store rule information on the sport match or

game; and basic movement storage section configured to store basic movement information on players' characteristic movements generalized in a sport of concern, wherein the play event information obtaining section includes a play event information determining section configured to determine a play event information item on a play event characteristic of each of the players included in the picture information as the play event information based on domain items extracted from the picture information, the rule information, and the basic movement information stored in the basic movement information storage section.

Sudhir discloses an automatic classification of tennis video for high-level content-based retrieval (Introduction, pg 81) that teaches

a domain item extracting section (fig. 3; Table 2) configured to extract from the picture information facility information including information on the obstacle (dashed line in fig. 7), information on the domains and information on boundary lines between the domains and an area outside the domains (fig. 7), and player's position information indicative of a player's position ("Player Tracking Module" in fig. 1);

rule information storage section ("court-line detection module" in fig. 1 for storing rules on court-line boundaries) configured to store rule information on the sport match or game; and

basic movement storage section ("Player Tracking Module" in fig. 1) configured to store basic movement information on players' characteristic movements generalized in a sport of concern, wherein a play event information obtaining section ("High-level Reasoning module" in deciding plays like "high-level events like baseline-rallies, passing-shots, serve-and-volleying and net-games" in s. 9, p 89) includes a play event information

determining section configured to determine a play event information item on a play event characteristic of each of the players included in the picture information as the play event information based on domain items (the boxes outlining the players on the right side of fig. 6 are the domains) extracted from the picture information, the rule information (fig. 7), and the basic movement information stored in the basic movement information storage section (fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the apparatus of Pingali in view of Pizano to include a domain item extracting section configured to extract from the picture information facility information including information on the obstacle, information on the domains and information on boundary lines between the domains and an area outside the domains, and player's position information indicative of a player's position; rule information storage section configured to store rule information on the sport match or game; and basic movement storage section configured to store basic movement information on players' characteristic movements generalized in a sport of concern, wherein the play event information obtaining section includes a play event information determining section configured to determine a play event information item on a play event characteristic of each of the players included in the picture information as the play event information based on domain items extracted from the picture information, the rule information, and the basic movement information stored in the basic movement information storage section as taught by Sudhir as “there is dire need for algorithms that are able to automatically infer high-level content from data.”, Sudhir, Introduction, p 81.

[ii] Regarding **Claim 4**, while Pingali in view of Pizano and Sudhir disclose the apparatus according to Claim 3, Pingali in view of Pizano and Sudhir do not teach wherein the player's position information is position information indicative of a domain containing each of the players and the instrument constantly held and used by the player.

Sudhir discloses an automatic classification of tennis video for high-level content-based retrieval (Introduction, pg 81) that teaches wherein the player's position information is position information indicative of a domain containing each of the players and the instrument constantly held and used by the player (the player, the tennis racquet, and tennis ball at the point of impact are all in the boxes (domain) on the right side of fig. 6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the apparatus of Pingali in view of Pizano and Sudhir to include wherein the player's position information is position information indicative of a domain containing each of the players and the instrument constantly held and used by the player as taught by Sudhir as “there is dire need for algorithms that are able to automatically infer high-level content from data.”, Sudhir, Introduction, p 81.

[iii] Regarding **Claim 5**, Pingali discloses wherein the domain item extracting section (section responsible for obtaining all coordinates to track/detect/match instruments, obstacle, and boundaries of the tennis court as shown in fig. 2 and fig. 4) is configured to extract the player's position information (the origination of the path of the tennis ball in fig. 2 and fig. 4 is the player's position information) from the picture information (fig. 4) based on the facility information (coordinates to track/detect/match instruments, obstacle, and boundaries in fig. 4 and fig. 2) extracted by the domain item extracting section.

[iv] Regarding **Claim 6**, Pingali discloses wherein the domain item extracting section (section responsible for obtaining all coordinates to track/detect/match instruments, obstacle, and boundaries of the tennis court as shown in fig. 2 and fig. 4) is configured to extract the instrument information from the picture information (fig. 2, fig. 4, path of the tennis ball) based on the facility information (coordinates to track/detect/match instruments, obstacle, and boundaries in fig. 4 and fig. 2) and the player's position information (the origination of the path of the tennis ball in fig. 2 and fig. 4 is the player's position information) extracted by the domain item extracting section.

[v] Regarding **Claim 7**, while Pingali in view of Pizano and Sudhir disclose the apparatus according to Claim 3, Pingali in view of Pizano and Sudhir do not teach wherein the play event information obtaining section includes a play event index information output section configured to output plural play event information items determined by the play event information determining section as arranged in a time sequence.

Sudhir discloses an automatic classification of tennis video for high-level content-based retrieval (Introduction, p. 81) that teaches wherein the play event information obtaining section includes a play event index information output section (Table 3, p. 88) configured to output plural play event information items ("High-level Annotation" column in Table 3) determined by the play event information determining section as arranged in a time sequence (the table suggests the arrangement of time sequence).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the apparatus of Pingali in view of Pizano and Sudhir to include wherein the play event information obtaining section includes a play event index

information output section configured to output plural play event information items determined by the play event information determining section as arranged in a time sequence as taught by Sudhir as “there is dire need for algorithms that are able to automatically infer high-level content from data.”, Sudhir, Introduction, p 81.

[vi] Regarding **Claim 8**, while Pingali in view of Pizano and Sudhir disclose the apparatus according to Claim 3, Pingali in view of Pizano and Sudhir do not teach wherein the play event index information output section is configured to output the play event information items together with instrument information items in a time sequence.

Sudhir discloses an automatic classification of tennis video for high-level content-based retrieval (Introduction, p. 81) that teaches wherein the play event index information output section (Table 3, p. 88) is configured to output the play event information items (“High-level Annotation” column in Table 3) together with instrument information items (“BL” is “Baseline”, and thus the table indicates the location information from which the instrument was during the serve) in a time sequence (the table suggests the arrangement of time sequence).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the apparatus of Pingali in view of Pizano and Sudhir to include wherein the play event index information output section is configured to output the play event information items together with instrument information items in a time sequence as taught by Sudhir as “there is dire need for algorithms that are able to automatically infer high-level content from data.”, Sudhir, Introduction, p. 81.

Response to Arguments

[10] Applicant's arguments filed on January 22, 2008 with respect to Claim 1 have been respectfully and fully considered, but they are not found persuasive.

[11] Summary of Remarks regarding Claim 1:

- [i] Applicant argues that from fig. 1 and the corresponding description, the second item of claim 1 has not been disclosed (*i.e.* the "play even information obtaining section"). Pingali discusses a trigger event, but does not mention the italicized part of item 2 (*i.e.* "from picture information included in the contents"). That is, nowhere does Pingali disclose or fairly suggest that the trigger event comes from picture information. To the contrary, it seems as though Pingali must wait for a trigger input based on something other than picture information; perhaps a human input. Once this happens then Pingali "executes a loop of capturing frames from the camera pair. . . ." Thus, before the trigger event, Pingali does not teach capturing frames. Thus, no picture information can be obtained before the triggering event. As such, it appears that the triggering event cannot be based on picture information as required by Claim 1. (Applicant Resp. at 12, Jan. 22, 2008.)
- [ii] Claim 1 specifically requires an "image substance recognizing section" (*emphasis added*). Keeping track of a changing game score is not recognizing the substance of an image. The Examiner must point to how an image is being recognized. Applicant respectfully submits that that this claimed feature is not disclosed or fairly suggested in Pingali. (Resp. at 13.)

[iii] Furthermore, the substance of the image must be "provided by the play event information," as required by Claim 1. The play event information, as indicated above contains picture information. As required in Claim 1, this picture information may be in the form of "score information displayed on a screen." Claim 1 requires the "image substance recognizing section" to recognize an image (*i.e.* a score), that is displayed on a screen. Nowhere is it apparent that Pingali discloses or fairly suggests this feature. As Pingali is not concerned with image recognition, but appears to be dealing with image tracking, there is no reason for Pingali to deal with an "image recognition section." (Resp. at 13.)

[11] Examiner's Response regarding Claim 1:

[i] However, Pingali discloses that the trigger event comes from picture information. The Examiner understands Pingali to be a multitude of "camera pair[s]" (Pingali, fig. 1) that each create their own "thread" of captured images around the tennis-court. These "camera pairs" are triggered by "characteristic movement of each of the players". See Pingali (attempting to "track an object over a large area" at p. 153, s. 2.2; example given in p. 153-54, s. 2.3). The triggers are based "on the current 3D velocity of the ball and 3D to image mapping using camera calibration parameters" when depending on "the next camera pair" to start recording (when the ball leaves the field-of-vision of the first camera pair). This is based on picture information, not "human input" as the Applicant suggests. Before the trigger event of the subsequent thread (of "the next camera pair", Pingali discloses in the example (*see* p. 153-54, s. 2.3) that picture information is already being obtained as "[t]he first thread to be triggered is determined based on the direction of the serve." The

"characteristic movement of the players" creates the ball direction that then is predicted in its velocity and position to trigger subsequent threads.

[ii] Referring to the above response by the Examiner, Pingali discloses an "image substance recognizing section" (*emphasis added*), because Pingali recognizes substance of an image (*e.g.* player characteristics and ball tracking to trigger a subsequent threat of another camera pair). "[I]mage substance recognizing section" is also broad in that it is possible to interpret the phrase to any sort of recognition in any image, which would include ball tracking, landing spots, (*see* Pingali, fig. 2), score keeping, virtual replays (*see* Pingali, fig. 3 through fig. 5) and so forth.

[iii] However, while Pingali does not teach wherein the score information itself is displayed on a screen, Pizano discloses an apparatus for detecting and interpreting textual captions in digital video signals (fig. 6) that teaches wherein the score information itself is displayed on a screen ("3) SPORTS/TRANSPARENT" in fig. 1; the score in fig. 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made for the screen of Pingali to include score information as taught by Pizano "to identify the collection of video frames that contain text captions.", Pizano, 5:54-56 and "to create a score browser which would enable a person to move directly to specific portions of the video", Pizano, 1:61-63.

Conclusion

[12] The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5923365 A; US 6031568 A; US 6072504 A; US 6071002 A; US 6231443 B1; US 20020018594 A1; US 20020159637 A1.

[13] **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David P. Rashid whose telephone number is (571) 270-1578. The examiner can normally be reached Monday - Friday 8:30 - 17:00 ET.

[14] If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
Examiner, Art Unit 2624

David P Rashid
Examiner
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/Vikkram Bali/
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